THE DUMBEST MARKETING PLOY • SPECIAL REPORT ON ASIA'S FUTURE

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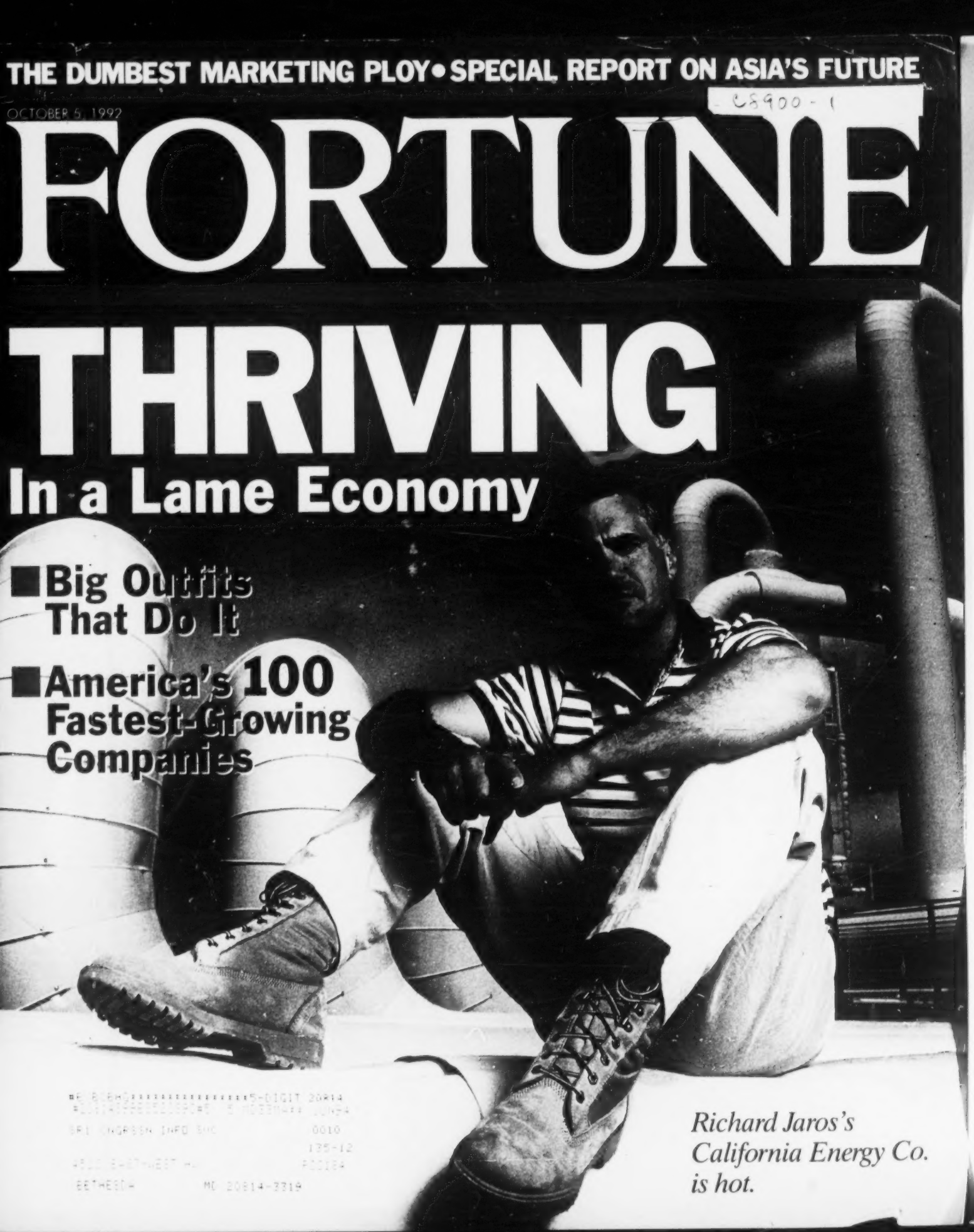
OCTOBER 5, 1992

FORTUNE

THRIVING
In a Lame Economy

- Big Outfits That Do It
- America's 100 Fastest-Growing Companies



Richard Jaros's California Energy Co. is hot.

OCTOBER 5, 1992

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FORTUNE

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ABOVE: Rubbermaid encourages customers to buy during slow times by introducing more products. Photo by Michael L. Abramson.

COVER: Earnings rose 122% at California Energy, a leading producer of geothermal power, after Jaros was brought in to control spending. Photograph by Alan Levenson.

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EDITOR'S DESK

DOING WELL DESPITE TOUGH TIMES

Cover writers Alan Deutschman and Rahul Jacob examine winners.

ANYBODY CAN FLOURISH in good times, but success in times like these takes something special. That rare quality is the subject of our two cover stories. Each probes a different species of winner, revealing strategies and lessons that any manager will find useful. In "Thriving in a Lame Economy" on page 44, reporter Rahul Jacob describes how big, established companies, from Alcoa to Rubbermaid, are gaining market share by developing new products or making smart acquisitions, even by increasing their advertising in the vacuum left when cautious competitors reduce theirs. Some giant outfits are in fact changing their metabolism, reinventing their most fundamental internal processes. Says award-winning writer Jacob, formerly a business journalist in his native India: "In a difficult environment, people aren't just sitting back but are becoming more innovative and gutsy in the way they do business."

An even more spectacular breed of winner consists of publicly traded companies growing at a more than 50% annual rate, despite the lame economy. The top 100 of these superstars are ranked, and some of their secrets are examined, in "America's Fastest-Growing Companies" on page 58. Not just a better mousetrap but also better management puts the lift in these outfits. Indeed, says writer Alan Deutschman, they are "experimental labs for management ideas."

Make no mistake: When a quarter of the workers on the globe cast off their chains, as they are doing in China, it is a profoundly moving, world-transforming event. Don't miss this issue's two eye-opening stories on so momentous a development, by Tokyo bureau chief Brent Schlender and by Louis Kraar, who has spent half a long and distinguished journalistic career living in, and reporting on, Asia. These articles are only part of a 20-page special report, prepared under the direction of international editor Donald Holt, on the economic challenges and opportunities in the Pacific Rim.

Asia expert Louis Kraar travels China

Marshall Loeb

MANAGING EDITOR

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AMERICA'S FASTEST-GROWING COMPANIES

Defying the lackluster economy, these 100 hard-chargers are creating jobs and enriching investors. Their innovative approaches offer lessons for anyone trying to run a company better. ■ *by Alan Deutschman*

Here's looking at you, kid: Jeff Bernstein cofounded highflying PictureTel as an MIT grad student. CEO Norman Gaut appears on the System 4000 videoconferencing setup.

LEN BOSACK and Sandy Lerner started **Cisco Systems** "without a particular business vision," says Lerner. "We had a technical vision." Working together to link up Stanford University's computers, the husband and wife team foresaw that big companies would need to do the same. So in 1984 they hatched Cisco (short for San Francisco) at the house they shared with Bosack's parents in suburban Atherton, California.

Dozens of venture capitalists turned down the chance to invest. The entrepreneurs had to borrow some $20,000 on their credit cards. They mortgaged the house. Lerner coped without a car. Just as well, since the two-car garage was filled by an old, discontinued Digital System 20 mainframe they bought for $5,000. Bosack, Lerner, and their early recruits held on to their day jobs for 18 months. For their fledgling firm, they worked late into the night.

Today Cisco employs 875 people. In the past four quarters it sold $340 million in networking systems. FORTUNE 500 companies use its devices to connect local-area networks around the world into unifying wide-area networks. The stock market values Cisco at $2.7 billion, more than Sun Microsystems, which came out of the same research group working in the same Stanford basement two years earlier.

After clashing with a seasoned CEO brought in by their financial backers, Lerner, 37, and Bosack, 40, decided to take the $170 million they had made on Cisco and start over in 1990. Their new 12-person computer company, XKL Systems, is a bike ride away from Microsoft's headquarters in the high-tech hamlet of Redmond, Washington. Lerner, a mathematician by training, knows it's improbable that they'll match Cisco's success.

But entrepreneurs thrive on fighting the odds. Look at some of the crazy long shots that made it out of the garage and on to FORTUNE's ranking of America's 100 fastest-growing companies. **PictureTel** (No. 14), the largest maker of videophones, was started by two 22-year-old MIT students soldering circuitboards in their apartment. Ma Bell had a big head start over the kids. PictureTel founders Jeffrey Bernstein and Brian Hinman, both 31, were mere toddlers when AT&T showed off a prototype Picturephone at the 1964 World's Fair. But the scrappy startup made the breakthrough that is turning the vision into reality. Its videophones now lead in the high end of the market.

Exabyte (No. 8) began when a photography buff, Harry Hinz, bought a Sony camcorder. Instead of taking home movies, he thought of using the gadget to record data—endless arrays of zeros and ones. Now Exabyte's 8-mm tape drives are the most efficient way of storing mind-boggling amounts of information.

Propelled by unstoppable ideas and passions, the fast growers take off in good times and bad. They make bigger contributions to the economy than their size alone suggests. Those on this year's list employ more than 200,000 people but have created many times that number of jobs among suppliers and customers. They also serve as experimental labs for innovative management styles, with lessons for anyone trying to run a company better.

To find the 100 fastest-growing U.S. com-

REPORTER ASSOCIATES *Sally Solo and Therese Eiben*

THE 100 FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
1	**WELLFLEET COMMUNICATIONS**	254%	$85.1 97	—	$11.5 54	$37.75 $29.25	50	$547 29	Nasdaq	Designs and builds products to connect computers, from local installations to corporate networks that span the world.
2	**GRANCARE**	204%	$227.8 47	—	$6.7 75	$10.75 —	11	$88 81	Nasdaq	Acquires nursing homes; runs 68 in seven states, mainly California and Wisconsin. Fills prescriptions in its own pharmacies.
3	**CISCO SYSTEMS**	194%	$339.6 30	126% 4	$84.4 5	$46.88 $22.75	35	$2,728 2	Nasdaq	Specializes in complex computer networking, some global. Clients with huge systems include Boeing and Salomon Bros.
4	**COLUMBIA HOSPITAL**	173%	$613.4 18	63% 32	$19.0 38	$17.25 $12.50	17	$318 49	Nasdaq	Acquires in the Southeast; local doctors own up to 40% of each hospital. Also in home health care, outpatient therapy.
5	**PHYCOR**	173%	$109.5 84	—	$1.5 98	$9.50 —	43	$60 89	Nasdaq	Runs 12 medical clinics for primary and specialty care, mainly in the South. They handle from ten to 29 specialties.
6	**QUAL-MED**	152%	$320.8 31	92% 15	$18.2 40	$12.00 $13.38	11	$184 63	Nasdaq	Owns HMOs in six Western states, with more than 15,000 doctors; expanding via acquisitions into the Southeast.
7	**OUTBACK STEAKHOUSE**	151%	$82.6 99	115% 6	$8.5 66	$35.75 $18.38	48	$413 37	Nasdaq	Moderately priced restaurants with Aussie theme and heaping plates, mainly in Florida, Texas, and North Carolina.
8	**EXABYTE**	148%	$282.7 38	96% 12	$42.0 16	$23.25 $20.50	12	$473 34	Nasdaq	Its compact 8-mm tape drives store vast amounts of computer data, usually to back up disks. Partners supply the components.
9	**DAMON**	145%	$284.6 37	—	$10.4 58	$19.75 $20.25	29	$307 55	NYSE	A nationwide chain of clinical laboratories performing both routine and esoteric tests—hepatitis, HIV, and the like.
10	**SYNOPTICS COMMUNICATIONS**	145%	$273.3 40	75% 23	$20.9 36	$35.50 $27.50	34	$677 23	Nasdaq	A pioneer in building local area networks (LANs) for software engineering, university research, banking, and retailing.

Sales and earnings growth figures based on past three to five years depending on public availability of operating results. Earnings growth figure appears only for companies posting 12 quarters of positive earnings, otherwise there is a dash. List excludes companies engaged primarily in banking, finance, and insurance.

PHOTOGRAPHS BY ALAN LEVENSON

M.D.s had a say in designing Columbia Hospital's Corpus Christi branch.

panies. FORTUNE asked William O'Neil & Co. of Los Angeles, an investment research firm, to search its database on publicly traded firms. We weeded out those that lost money in either of the last two quarters or over the past year as a whole. Then we ranked the survivors by annual sales growth, calculated from at least three years of operating results, five when available. Finally, we picked a floor of $82 million annual sales to yield a round 100 entries. (Financial companies, for which sales figures are not relevant, were excluded.) An alphabetical index appears at the end of this article.

FORTUNE's sizzling risers are clustered mainly in computers and electronics (32), health care (27), and energy and the environment (16). Most make their home in the Sunbelt. California leads the states with 25, including 17 in the San Francisco Bay Area, attesting to Silicon Valley's continuing dynamism. Texas places with 11, Florida shows with seven. New York lags with two.

Growing markets and a favorable regulatory climate make the South and the West especially attractive to profit-seeking health care providers such as **Columbia Hospital** (No. 4). The company buys hospitals and turns the local doctors into co-owners. Launched in 1987 by Fort Worth dealmaker Richard Rainwater, 48, and lawyer Richard Scott, 39, Columbia has already become the biggest provider of health care in El Paso, Miami, and Fort Lauderdale.

Let's say you want to build one of America's fastest-growing companies, an outfit that will reach the FORTUNE 500 in a mere three years, as Compaq and **Conner Peripherals** (No. 34) did. How do you go about it? You could invent something truly original—but that isn't really necessary. "Billion-dollar computer companies didn't come up with a new thing," says Regis McKenna, the Silicon Valley marketing adviser. "Apple didn't create the mouse, or pull-down menus, or disk drives. A lot of technology is out there already. It takes imagination and market awareness to put it together in a unique way."

Often the originator of an idea is challenged by an innovative follower. Home Shopping Network was the first cable TV station dedicated to hawking merchandise. Its success attracted a horde of competitors, including powerhouses such as J.C. Penney and Kmart. It also caught the attention of Joseph Segel, 61, an entrepreneur

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
11	CALIFORNIA ENERGY	138%	$120.7 75	63% 31	$33.4 22	$11.88 $15.50	14	$378 44	ASE	Geothermal power; main plant in Mojave Desert sells to Southern California Edison. Holds rights to sites around the West.
12	OFFICE DEPOT	134%	$1,493.0 5	32% 54	$28.8 26	$27.13 $17.00	54	$1,549 8	NYSE	Largest office-supplies superstore chain, 271 outlets in 31 states and Canada; 5,100 items at discount. Northeast still untapped.
13	DIAGNOSTEK	134%	$304.7 34	65% 30	$14.1 47	$16.50 $23.00	26	$384 42	NYSE	Mail-order prescription drug dispensing; runs pharmacies at hospitals. Being acquired by Medco Containment Services.
14	PICTURETEL	134%	$111.4 83	—	$6.8 72	$11.50 $34.00	27	$170 66	Nasdaq	Its videophones are increasingly hot for business teleconferences. IBM plans to build its systems into future computers.
15	REPUBLIC WASTE INDUSTRIES	133%	$129.8 72	50% 40	$6.6 77	$7.13 $11.13	26	$177 65	Nasdaq	Owns or runs waste treatment, storage and disposal facilities, along with solid waste landfills, in seven states and Canada.
16	INTELLIGENT ELECTRONICS	130%	$2,414.4 1	58% 34	$35.2 19	$9.38 $10.25	10	$339 47	Nasdaq	A wholesale computer distributor that last year acquired BizMart office product superstores chain—which now sell computers.
17	MAXXAM	129%	$2,208.0 2	31% 58	$17.6 41	$24.75 $41.00	13	$215 59	ASE	Basic, basic: majority stake in Kaiser Aluminum, owns Pacific Lumber. Great year for aluminum cans and premium redwood.
18	T² MEDICAL	124%	$200.5 53	44% 47	$48.3 14	$25.38 $31.50	19	$891 14	NYSE	Owns or runs 216 companies that provide home intravenous care; sells management help to small medical practices.
19	AMERICAN WASTE SERVICES	119%	$96.6 91	68% 29	$7.5 69	$2.88 $6.63	12	$53 93	NYSE	Waste disposal, other services for industrial, commercial, municipal customers in East and Midwest. Expertise in sludge.
20	SYBASE	117%	$196.9 55	—	$12.4 52	$29.50 $18.00	48	$553 27	Nasdaq	Its database software brings up-to-the-minute information to workers in global companies such as American Airlines.

who had started 17 companies, mostly small, private firms. Segel bet he could do the job better, so he founded **QVC Network** (No. 43), whose initials stand for quality, value, and convenience. P.S.: The retailing giants failed. Segel succeeded. QVC is close behind Home Shopping Network in annual sales, with $1 billion, and ahead in profits ($37 million).

Why did QVC make it? Segel realized the business was as much about entertainment as retailing, and recruited legions of celebrities to make talk show–style presentations. And rather than disorienting viewers with pitches for a hodgepodge of products, as HSN did, QVC scheduled programming in themed, hourly segments, such as "Gifts for Kids" or "Ideas for the Cook," and published a list of shows four weeks ahead.

One way for startups to steal opportunities from industry behemoths is to take a giant leap when everyone else is going step by step. Established high-tech companies aim to make new products a little faster and a bit cheaper each time around. Startups bet on breakthroughs. Exabyte developed a

THE ONES THAT FELL FROM GLORY

No question that it's tough being a star: Witness the novas from last year's roster that have flashed and faded. Zeos led the 1991 rankings with a 256% sales growth rate. But the PC clone maker was wounded in the price wars. Zeos doesn't appear on FORTUNE's new list because it lost $11 million last quarter. Royal Appliance's stock has fallen from $30 a share to $10. The company cashed in on a niche, the hand-held vacuum, but pushed too eagerly to expand its line.

Such mishaps help explain why growth stocks are unnervingly volatile: The companies are still finding their way in uncharted territory. Complicating matters, investors tend to overreact. Good news sends hopes soaring; then, when a quarter fails to meet projections, Wall Street turns on the hapless offender. **Dell Computer**'s stock fell 25% in one day last June when the company told analysts that the price wars would hurt margins. But low costs have gotten it through the shakeout with record profits.

Goaded by Wall Street to produce rising earnings, growth stars can be tempted to cook the books. Landfill operator Chambers Development counted items such as executive salaries and travel as capital investments rather than expenses. When Chambers confessed its errors and took a $27 million charge against earnings, the stock fell 63% in 24 hours.

Symantec sets a good example of conservative accounting with its "sell through" approach. The software company books as revenues only purchases by the end user. Competitors count shipments to middlemen and retailers, which could be misleading if the products are returned unsold (see Selling).

That's one reason Symantec is on our list again along with 54 of last year's hot performers, including 12 who made it into the top 20 both times. Not all comers crash.

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
21	CALLAWAY GOLF	111%	$92.0 94	—	$12.8 50	$23.25 —	13	$162 69	NYSE	"Big Bertha" oversized clubs have more than doubled sales since January 1991 introduction. Getting into Japanese market.
22	BLOCKBUSTER ENTERTAINMENT	107%	$999.7 10	75% 22	$112.0 2	$13.38 $11.50	21	$2,142 4	NYSE	Runs or franchises more than 2,000 video rental stores carrying over 5,000 titles each. In eight other countries too.
23	CIRRUS LOGIC	107%	$214.5 50	28% 65	$16.3 44	$26.13 $21.25	36	$347 46	Nasdaq	Builds advanced digital and analog/digital semiconductors for computers, telecommunications, and consumer electronics.
24	STAPLES	105%	$680.5 15	33% 53	$11.0 56	$28.75 $20.25	44	$507 32	Nasdaq	Pioneer in supermarket-style stores for small and medium-size businesses, typically selling supplies at 50% off list price.
25	COMPUCOM SYSTEMS	104%	$659.7 16	28% 64	$4.7 82	$1.69 $2.50	9	$48 94	Nasdaq	Microcomputer dealer marketing major hardware and software brands to corporations. Designs and builds network systems.
26	STARBUCKS	103%	$82.3 100	—	$3.4 90	$24.88 —	83	$316 50	Nasdaq	Buys coffee beans from around the world, roasts and brews 30 varieties in 154 West Coast, Denver, and Chicago coffee shops.
27	COVENTRY	99%	$384.3 25	—	$12.0 53	$13.88 $8.50	14	$169 67	Nasdaq	HMOs in Pittsburgh, Harrisburg, St. Louis covering more than 300,000 people, most in big companies; going after smaller fry.
28	RASTEROPS	99%	$89.2 95	97% 11	$7.2 86	$10.00 $25.25	14	$56 90	Nasdaq	Computer color graphics systems mainly for printing and publishing; also used in medical imaging, architecture, meteorology.
29	AMGEN	93%	$873.7 12	—	$244.3 1	$63.38 $53.25	39	$8,357 1	Nasdaq	Biotech company with focus on blood cells, skin growth, cancer treatment. Winning blood-treating drugs: Epogen and Neupogen.
30	LDDS COMMUNICATIONS	93%	$341.1 29	90% 16	$23.2 31	$30.75 $27.50	20	$441 36	Nasdaq	Provides WATS, 800 lines, other long distance services in South and Midwest. Leases transmission lines, spends to acquire.

tape drive with 12½ times the capacity of competing drives.

Startups have the fearlessness—or recklessness—needed for leapfrogging innovation. "No big company had the gumption to do what we did," says PictureTel CEO Norman Gaut, 55. "Nobody had the guts but us." But visionaries suffer for their boldness. "At first," he says, "no venture capitalist would touch us because this was an unproven product in an unproven marketplace." From Exabyte's scenic lookout in Boulder, Colorado, CEO Peter Behrendt enlarges on the theme: "When we started, half the world said, 'Who the hell needs it?' The other half said, 'It won't work.' People thought there must not be enough oxygen in Boulder."

In industries filled with entrenched giants, newcomers have a big advantage: They draw on a clean slate. "An established company's major goal is to defend what it did last year. That's the fatal flaw," says Robert Epstein, 40, who cofounded **Sybase** (No. 20) in 1984. The company seized the opportunity to create software for the onslaught of computer networking. "It didn't seem like rocket science that there would be a major change," he says. So why didn't big computer firms see the networking trend coming? Says Cisco co-founder Len Bosack: "They believed their own lies."

Small companies constitute the first line of attack in the battle of innovation. These foot soldiers forge ahead into treacherous new markets. Eighty-seven computer makers worldwide stamp their brands on drives bought from Exabyte. In Japan, NEC sells Cisco routers under its own name. Cisco chief John Morgridge, 59, calls this "impregnating the technology in other people's products." But it's the studs who get to prance in the hay. Cisco's net profit margins are an impressive 25%.

Big companies rely more and more on innovations hatched by startups. To make sure they'll have access to the new technologies, they've stooped to forming strategic partnerships with industry infants. In turn, alliances enable the up-and-comers to focus on areas where they add value and derive a competitive edge. Otherwise they could get overwhelmed by their fast growth, as so many entrepreneurial companies do.

Exabyte limits its manufacturing roles to final assembly, testing, and customization, relying mainly on three partners for the rest. Sony provides the mechanisms for the tape drives. Solectron, a Baldrige Award winner in Silicon Valley, makes the circuitboards. Japan's Kubota, which provided a seven-figure cash infusion in 1987, builds more than half the drives, following processes and specifications set by Exabyte. Twelve patents shield Exabyte from competitors.

The Sony partnership was crucial to Exabyte's rise. In 1986 the startup approached the Japanese giant with the idea of using the camcorder's 8-mm tape mechanism to

THE FIVE BIGGEST

SALES

post four quarters ($ millions)

1	INTELLIGENT ELECTRONICS	$2,414.4
2	MAXXAM	$2,208.0
3	MERISEL	$1,855.8
4	CONNER PERIPHERALS	$1,804.2
5	OFFICE DEPOT	$1,493.0

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
31	ENERGY VENTURES	91%	$179.0 59	93% 14	$4.0 87	$11.50 $17.00	34	$138 75	Nasdaq	Makes pipes, pumps, other oil-drilling equipment, operates shallow-water barge rigs. Overseas business is growing fast.
32	MATRIX SERVICE	91%	$123.1 73	88% 17	$9.2 62	$15.00 $27.75	16	$141 73	Nasdaq	Builds and maintains storage tanks for oil and petrochemical majors; tougher environmental rules are spurring demand.
33	OXFORD HEALTH PLANS	91%	$120.9 74	—	$5.6 80	$29.25 $17.38	38	$215 58	Nasdaq	Managed care company with HMOs, Medicare, Medicaid plans for small and mid-size companies in metropolitan New York.
34	CONNER PERIPHERALS	90%	$1,804.2 4	55% 36	$101.3 4	$19.50 $22.50	11	$1,133 10	NYSE	Leading OEM supplier of high-performance disk drives. Has weathered falling prices with cost cutting and new business.
35	DESTEC ENERGY	90%	$424.7 21	106% 9	$82.3 6	$14.50 $20.38	11	$903 13	NYSE	Produces electricity, thermal energy, and syngas, a natural gas substitute made from coal. Runs 12 co-generation facilities.
36	CABLETRON SYSTEMS	89%	$318.0 32	123% 5	$63.4 8	$57.50 $48.38	25	$1,615 7	NYSE	Supplies local area network equipment and services to major companies, federal agencies, and universities in ten countries.
37	SYMANTEC	89%	$233.6 46	57% 35	$21.2 35	$17.00 $29.88	20	$372 45	Nasdaq	PC software, including the Norton line. Sent free antivirus programs to 250,000 customers when Michelangelo struck.
38	SCIMED LIFE SYSTEMS	89%	$193.2 56	143% 1	$33.1 23	$55.25 $83.50	25	$823 17	Nasdaq	Its balloon-tipped catheters open up clogged arteries; new products treat vascular diseases affecting legs and kidneys.
39	AMERICAN POWER CONVERSION	88%	$119.1 76	79% 20	$20.4 37	$31.75 $13.75	36	$683 22	Nasdaq	Products that keep computers and other communications equipment going when power fails; markets software and cables.
40	ADVANCED LOGIC RESEARCH	87%	$223.7 48	62% 33	$7.3 71	$4.75 $14.00	7	$53 92	Nasdaq	PCs, workstations, network servers. New marketing channels: an 800 phone number and Micro United office supply chain.

record data. Sony was open-minded enough to see that these American unknowns were onto something. Exabyte's first product was an off-the-shelf camcorder with minor modifications. No one had ever tried to turn a consumer product into a state-of-the-art computing device. Normally, technological currents slowly flow the other way.

Partnering with Kubota has helped Exabyte's cash flow markedly. Kubota buys components, builds the drives, ships them to Exabyte, and only then sends Exabyte an invoice. By that time, Exabyte has already sold the machine. And hasn't spent a penny of its own on manufacturing. No wonder the company is debt-free and holds some $70 million in cash.

Cisco doesn't have to invest much in inventory or accounts receivable either. Suppliers make all the components. Cisco assembles and tests the boxes in a room roughly the size of a basketball court. "The product is only in our hands for a week," says CEO Morgridge. Despite Cisco's reliance on vendors, its investment in intellectual capital protects against new entrants in the market—over 200 person-years of software development went into its product. But it does face competition from **Wellfleet Communications**, which started two years later. At $85 million annual sales, Wellfleet is still one-quarter Cisco's size but rising quickly. It ranks No. 1 on FORTUNE's list to Cisco's No. 3.

Getting close to their suppliers helps charge-ahead companies keep staffs small. In the late 1960s, a star called Hewlett-Packard employed 15,840 people. Today Cisco has roughly the same sales but only 875 employees. Even after adjusting for inflation, H-P had less than one-fifth the sales per employee. Morgridge, who wears a badge identifying himself as Cisco's 34th recruit, personally approves every request for hiring.

Don't let the low head counts fool you, though: These enterprises are forceful engines of job creation. Sybase can hardly hire people fast enough. It has 1,200 employees—and 100 openings. Last year Exabyte had 855 people on its own payroll. But the company figures it created 4,800 jobs—including those of partners, vendors, and customers.

One of Exabyte's most remarkable em-

IBM alumnus Peter Behrendt has led Exabyte to a Rocky Mountain high.

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
41	**XILINX**	85%	$141.7 71	81% 18	$21.5 33	$20.50 $30.25	23	$469 35	Nasdaq	Supplies electronic equipment makers with logic chips and software to program them. Acquisition of Plus Logic opens big market.
42	**FIRSTMISS GOLD**	85%	$83.0 98	—	$4.3 85	$3.88 $3.13	16	$70 84	Nasdaq	Gold mining in Nevada. Estimated reserves hold about 1,315,100 ounces, good for at least five years, exploring for more.
43	**QVC NETWORK**	84%	$984.8 11	—	$37.1 18	$20.38 $15.00	20	$509 31	Nasdaq	Two 24-hour cable TV shopping channels. They attract 100,000 new customers a month, almost 60% buy again.
44	**WATSCO**	82%	$175.1 60	4% 74	$2.2 95	$9.75 $8.63	12	$16 99	ASE	Manufactures components for air conditioning, heating, refrigeration. Post-Andrew orders are lifting business in Florida.
45	**EKCO GROUP**	81%	$185.4 58	80% 19	$12.5 51	$7.00 $4.50	9	$113 78	NYSE	Homey: baking pans, spatulas, mousetraps. Acquired Frem, a $26 million maker of plastic storage products, in January.
46	**MID-AMERICAN WASTE SYSTEMS**	81%	$147.5 70	106% 10	$14.8 46	$17.63 $24.75	20	$396 40	NYSE	Acquires nonhazardous solid-waste dumps and landfills; serves some 400,000 customers. Recycles and composts too.
47	**KNOWLEDGEWARE**	80%	$115.1 79	5% 72	$0.3 100	$11.50 $29.50	575	$135 76	Nasdaq	Software for management information systems pros. Cut employment 20% after loss in fall of 1991—but increased R&D staff.
48	**RANDOM ACCESS**	78%	$92.2 93	24% 70	$0.4 99	$1.38 $3.63	46	$10 100	Nasdaq	Franchisee of Intelligent Electronics (No. 16). Resells IBM, Compaq, other microcomputers to corporations in West.
49	**FRANKLIN QUEST**	76%	$112.5 81	113% 8	$15.1 45	$16.00 —	18	$310 54	NYSE	Organizational binders and software; runs seminars and teaches time management skills to clients, from GE to the IRS.
50	**REGAL COMMUNICATIONS**	76%	$97.9 90	75% 24	$3.8 88	$3.56 $1.63	12	$40 96	Nasdaq	900 numbers for stock reports, auto ads, "guaranteed" connections with opposite sex. Also produces infomercials.

THE FIVE GREATEST

	MARKET VALUE $ millions	
1	AMGEN	$8,357
2	CISCO SYSTEMS	$2,728
3	ORACLE SYSTEMS	$2,421
4	BLOCKBUSTER ENTERTAINMENT	$2,142
5	FIRST FINANCIAL MANAGEMENT	$1,924

ployees is CEO Behrendt, 53, who testifies to the undiminished power of the American dream. After World War II, his father, Martin, rebuilt the bombed-out E.H. Bernhardt textile plant in Zittau, a small town near the Polish border in East Germany. Its success as a private enterprise, in blatant contrast with the failure of state-owned companies, embarrassed the government. In 1954 the company was seized and Martin arrested on trumped-up charges of sabotage. Later he was convicted in a show trial and imprisoned for six years.

On the fateful day of Martin's arrest, a friend tipped off Peter's mother, Gerda, that the police were on the way to their house. She rushed to the high school and pulled Peter, 15, out of chemistry class. Traveling at night they fled 125 miles to a refugee camp in West Berlin.

A year later they emigrated to the U.S. Gerda found work as a live-in housekeeper in Beverly Hills. In a single week, Peter went from the refugee camp to Beverly Hills High School. He knew three English words: sweetheart, chewing gum, and cowboy. No matter. He went on to get degrees in engineering and philosophy at UCLA and work 26 years at IBM as—among other things—a product manager and quality assurance executive.

Building companies must have been in his blood. He joined Exabyte as president in 1987. "Working for one company is like kissing one girl in your life," he says. "It's nice, but you wonder what you're missing." At the time, the startup employed only 50 people and had shipped 69 tape drives for total sales of $170,000. Since then the company has shipped 450,000 drives, worth $690 million. Harry Hinz left last year. Behrendt became CEO in 1990 and succeeded co-founder Juan Rodriquez as chairman last January.

Behrendt first returned to eastern Germany in the summer of 1990. He took his family on a tour of the old textile factory, after reassuring local authorities that he didn't plan to reclaim ownership of the company. He was busy building another one.

Exabyte has carefully addressed the issue of how to stay in control during whirlwind growth. Using a network of 1,450 PCs—that's 1 per employee—it can close the figures on a quarter just two days after the period ends. The network also lets Exabyte tailor products to a customer's commands right away without stopping the assembly line. To better serve users, Exabyte has manufactured over 200 versions of its 2-gigabyte tape drives. These pocket-size cartridges hold the equivalent of over 2,000 floppy disks—or a stack of memos 38 stories high.

Exabyte gets a bit wacky in its quest to understand the user. It has a distinguished-looking male mannequin named Gus the Customer. He wears Behrendt's old suits and shoes, holds a coffee cup with his name inscribed, and sits in on strategy meetings. "The idea is stupid, but it works," says Beh-

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
51	IDB COMMUNICATIONS	75%	$118.5 77	—	$4.6 83	$15.00 $12.50	31	$152 71	Nasdaq	Its global satellite and fiber-optic network carries radio, TV, telephone, and data. New direct-dial to all the CIS republics.
52	RADIUS	74%	$159.5 67	25% 67	$8.7 65	$6.88 $7.25	11	$90 80	Nasdaq	Apple's No. 1 vendor. Hardware and software that boosts the power and graphics performance of personal computers.
53	MICRONICS COMPUTERS	74%	$157.7 68	96% 13	$9.2 61	$4.50 $8.50	5	$47 95	Nasdaq	A big supplier of system boards, the brains of personal computers, to brand-name manufacturers and distributors.
54	RALLY'S	74%	$104.5 85	74% 25	$7.6 68	$24.00 $8.00	24	$200 61	Nasdaq	Boasts made-to-order sandwiches in 45 seconds, 25% cheaper than McD's, from drive-in windows in 25 states.
55	SPORTSTOWN	74%	$102.0 87	—	$1.8 96	$14.25 —	27	$69 85	Nasdaq	Megastores in Georgia and Texas offer 15,000 sporting-goods items, plus bowling-ball drilling, putting greens.
56	VENCOR	73%	$174.5 61	68% 28	$13.5 48	$31.88 $21.75	41	$567 26	NYSE	Owns or leases 20 hospitals for chronically ill patients, most needing life support, in 11 states in the West, South, and Midwest.
57	SERV-TECH	73%	$112.3 82	32% 56	$3.6 89	$9.63 $18.50	17	$54 91	Nasdaq	Major maintenance, environmental, and electrical contracting services for oil industry. Growing in Europe, Canada, and Mexico.
58	AES	71%	$355.5 28	127% 3	$47.9 15	$19.75 $26.50	18	$850 15	Nasdaq	Stakes in six independent power plants in the U.S., all co-generation; two in Northern Ireland, one in England.
59	IVAX	69%	$279.2 39	—	$13.2 49	$27.50 $19.13	131	$1,742 6	ASE	Mainly generic pharmaceuticals, prescription and over-the-counter. Also sells diagnostic test kits, specialty chemicals.
60	INTEGRATED HEALTH SERVICES	69%	$166.4 65	49% 43	$9.1 64	$21.00 $18.75	23	$231 57	Nasdaq	Operates more than 50 nursing homes, many providing occupational and other therapies at lower cost than at hospitals.

THE FIVE FASTEST EPS GROWTH

annual rate over 3–5 years

1	SCIMED LIFE SYSTEMS	143%
2	OGDEN PROJECTS	129%
3	AES	127%
4	CISCO SYSTEMS	126%
5	CABELTRON SYSTEMS	123%

rendt. "It gets people to remember the customer even when the customer isn't present."

Successful high-tech startups don't let the natural hubris of creative genius get in the way of listening to the user. Says Cisco cofounder Sandy Lerner: "If you have the customer on the other end of the line, it's like talking with God." **Symantec** (No. 37), the maker of popular PC software such as the Peter Norton line, invites ten to 20 customers together to two-day Technology Summits. They rap about the future of a product line, such as software that defends against viruses. "You get hours and hours of heated discussions," says CEO Gordon Eubanks Jr., 45. The issues: What's wrong? What can be better? Where should we be a year from now? Says Eubanks: "The key is not getting the most senior people, but the appropriate people, and not to lecture them, but to listen."

One problem for all companies, and especially for fast growers on the technological edge, is what to make of contradictory signals coming from customers. Ed McCracken, 48, CEO of **Silicon Graphics** (No. 83), the biggest maker of workstations for 3-D graphics, says that most users are perfectly happy with existing products: "If we listened to market research about our traditional customers, we would go out of business." McCracken recalls that when his alma mater, Hewlett-Packard, developed the first hand-held calculator, the company's research said that there wasn't a market for it. Most people thought slide rules worked just fine.

"We look for customers who aren't satisfied," says McCracken. "React first to the best and brightest customers. Find the key people who want to break the barriers and demand what we aren't doing today." Silicon Graphics relies on its top engineers—not market researchers—to take the pulse of these "power users."

The fastest-growing companies are laboratories for innovative managerial styles. At **Radius** (No. 52), which makes hardware and software that soup up the graphics of personal computers, CEO Michael Boich, 38, forbids compromises. "You can't make decisions by committee," he says. "A single person has to make the decision." Suppose that person is the general manager of a product line. He'll get advice from an "action team" made up of a bunch of heavy hitters: the CEO, the heads of U.S. and international sales, and the VPs of engineering, manufacturing, finance, and marketing. But ultimately the product manager—the lowest-ranking member of the team—is the one who calls the shots. And the company sticks with his call.

At startups, the culture is a natural extension of the founders' personalities. One good sign is a top executive with a small office. "There's no holy grail of executive offices here," says Sybase's Bob Epstein. "I would make my office smaller if I could." But it's already smaller than the ones most

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions	Per share annual growth rate	Net last four qtrs. $ millions	Price 8/31/92	P/E last four qtrs.	Market value $ millions	Where traded	
			100 RANK	100 RANK	100 RANK	Year earlier		100 RANK		
61	CRITICAL CARE AMERICA	68%	$264.1 43	24% 68	$29.2 25	$35.75 $44.63	26	$763 19	NYSE	Provides intravenous drugs and nutrients at home for patients; runs more than 50 regional centers in metropolitan areas.
62	INTERNATIONAL RECOVERY	67%	$221.2 49	47% 45	$5.0 81	$14.63 $16.63	14	$69 86	NYSE	Operates 24-hour fueling stations for planes at more than 1,100 airports around the world; recycles used oil.
63	NOVACARE	66%	$385.0 24	52% 39	$37.5 17	$20.00 $18.75	27	$762 20	NYSE	Supplies rehabilitation therapy services to long-term health care institutions; has acquired prosthetic and orthotic care firm.
64	CENTURY MEDICORP	66%	$170.3 64	113% 7	$6.7 74	$28.13 $10.00	25	$152 70	Nasdaq	Three HMOs serving about 120,000 people in Southern California. Also owns two hospitals; expects to expand northward.
65	PHARMACY MGMT. SERVICES	66%	$103.0 86	32% 57	$2.2 94	$7.00 $10.75	30	$61 88	Nasdaq	Managed care for workers compensation claimants from time they're hurt until they return to work. Operates in 28 states.
66	HOSPITAL STAFFING SERVICES	65%	$113.2 80	30% 59	$3.2 92	$5.25 $11.25	9	$29 97	NYSE	Mostly home-nursing services in California, Florida, and the Northeast. Also places medical temps in hospitals.
67	QUANTUM	63%	$1,245.4 8	33% 52	$55.9 11	$13.63 $11.50	11	$573 25	Nasdaq	Hard disk drives for personal computers, workstations, notebook computers. International sales last year were 45% of total.
68	COMPTRONIX	63%	$117.3 78	73% 26	$6.4 79	$18.13 $9.25	31	$196 62	Nasdaq	Assembles printed circuitboards for electronics manufacturers, works with customers to develop new products.
69	FIRST FINANCIAL MANAGEMENT	62%	$1,321.6 7	28% 63	$107.2 3	$34.50 $28.13	17	$1,924 5	NYSE	Information services: credit card authorization, check verification, data and transaction processing for Medicaid programs.
70	TRIMAS	60%	$366.9 27	29% 61	$23.5 30	$22.50 $20.63	15	$311 53	NYSE	Its 15 businesses manufacture screws, trailer hitches, steel drums for industrial fluids, and other gritty stuff.

Actress Susan Lucci (right) pitches hair care products on QVC Network.

drones get at big companies. For years he used a $120 pressboard desk that a cofounder had assembled. Last summer Epstein's staff replaced it while the boss was away. "The goal is not cheapness," he allows, "but a sense of values."

Humility is a prime virtue for leaders of growth companies, where the natural temptation is toward arrogance. "You have every right to be humble," is one of Bob Epstein's mottoes. The other: "No one ever lost a sale by listening too closely." A reporter once asked Peter Behrendt's wife how she keeps him so humble. Her answer: When Peter gets his photo in the paper, she makes him take out the cat litter.

Sustaining a culture is especially hard now that high-tech companies go global virtually from the start. Exabyte's seventh tape drive was shipped to France. Sybase's Epstein says the only way to establish the culture overseas is by sending American executives to set the tone. So he spent six months working in Paris this year. Fittingly, Sybase's symbol is the snail-like exponential curve, which preserves its shape and identity as it gets bigger.

When a company grows to the point that the founders no longer know everyone's name, it's important to promote the culture through explicit programs. Behrendt runs Pastries With Peter, a monthly breakfast with ten randomly picked employees. So far he has met with some 400 of the company's 968 employees this way.

Exabyte also holds 2½-hour quarterly meetings for all employees. There's Q&A with top management and speeches from outsiders, such as customers and vendors. Behrendt introduces all new employees, showing slides of them and making sure to say something personal and interesting about each. No wonder the company attracted 10,000 applications for 200 new jobs last year. Its annual turnover: a tiny 6%.

While growing from a handful of people to hundreds, companies should hold on to a sense of belonging and common purpose. All Exabyte employees have business cards, including workers on the manufacturing line. Behrendt says this shows them that the company wants them around a long time and sees them as its representatives in the commun[illegible] At Symantec, every project team [illegible]igns its own T-shirt. Software developers wear them around the office as a sign of team spirit. The company store is stocked high with employee-designed items from yo-yos to coffee mugs and playing cards, all bearing the Symantec name.

continued

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
71	NABORS INDUSTRIES	60%	$272.6 42	68% 27	$33.5 21	$7.75 $5.75	15	$395 41	ASE	Drilling, transportation, construction, and maintenance for the oil industry; North and South America, the Middle East, Asia
72	EXIDE ELECTRONICS GROUP	60%	$203.0 52	—	$3.3 91	$11.75 $7.75	21	$64 87	Nasdaq	Its backup power supply products keep computers going during power failures and protect against voltage fluctuations
73	OFFSHORE PIPELINES	58%	$389.6 23	—	$6.8 73	$12.75 $8.88	15	$102 79	NYSE	Marine construction services to offshore oil and gas producers. Building international business with ships acquired in 1990.
74	GENZYME	58%	$172.7 63	—	$32.0 24	$40.25 $42.00	30	$844 16	Nasdaq	Biopharmaceutical products include Ceradase, for treating Gaucher disease. In development: treatments for cystic fibrosis
75	AMERICAN OIL & GAS	57%	$372.7 26	—	$16.4 43	$14.38 $10.63	19	$313 51	NYSE	Owns the principal natural-gas pipeline system in Western Texas; looking for more while demand and prices are relatively low.
76	RAMSAY-HMO	57%	$199.7 54	—	$7.5 70	$25.00 $14.00	20	$147 72	Nasdaq	Health care managment in South Florida, with fast-growing Medicare-eligible population and a surplus of physicians
77	DELL COMPUTER	56%	$1,338.7 6	35% 51	$70.2 7	$25.25 $21.75	14	$904 12	Nasdaq	The PC direct-marketing pioneer now gets more than half its sales from high-performance systems such as workstations.
78	ORACLE SYSTEMS	56%	$1,178.5 9	—	$61.5 9	$17.50 $11.25	41	$2,421 3	Nasdaq	Database software for big and small computers; sells applications packages for accounting, manufacturing, human resources.
79	CONTINENTAL MEDICAL SYSTEMS	56%	$658.8 17	49% 41	$26.4 27	$17.63 $20.13	24	$547 28	NYSE	Inpatient and outpatient rehabilitation—for strokes, orthopedic problems, work injuries—at 142 facilities in 26 states.
80	VISHAY INTERTECHNOLOGY	55%	$547.9 19	12% 71	$22.8 32	$25.50 $18.50	18	$312 52	NYSE	Electronic components for computers, cars, medical equipment, other products; acquired Sprague Technologies this year.

CEO Eubanks explains his management approach as the four P's: people, products, passion, and process. "People" comes first, he says. "In order to be successful, you need a continuity of people." From the beginning, high-potential companies need to attract individuals who will be ready to handle whatever hits them when growth suddenly explodes and there's no time to waste.

Unable to set a steady course in constantly shifting waters, fast vessels must rely on the versatility of their crews. "We don't do long-term planning," says Ed McCracken of Silicon Graphics. His company looks no further than two years ahead, since its product cycle is only eight months. The breakneck pace demands scrappy individuals who can adapt, improvise, overcome. "If you don't like to have your desk moved three times a year," McCracken says, "don't work here."

In the heady rush of growth, creators of new companies can lose their heads. Two years ago **California Energy** (No. 11), a leading producer of geothermal power, was in poor financial condition despite sharply rising sales. The founders were "visionary entrepreneurs," says President Richard Jaros, 40, but not managers—and they got carried away by their success. They splurged on a company plane and some 20 company cars, including a Bentley. To the rescue came Peter Kiewit Sons', the big construction firm, which began buying a 38% stake in February 1991. Like Warren Buffett, a tenant in Kiewit's Omaha office building, the company invests shrewdly and controls spending. It brought in new top management, led by Jaros, the man on our cover. A University of Chicago MBA, he had honed his financial skills during ten years at Kiewit. He sold the plane, cut staff, and moved the headquarters from San Francisco to Omaha. In all, corporate overhead got sliced in half. Results: Earnings rose 122% last year. Net profit margins climbed from 13% to 20%.

California Energy will benefit as the fragmented independent power industry consolidates in favor of large-scale, low-cost producers, and as regulatory change gives the indies still more access to power grids. "We're at a launching point for further reform," says Jaros. The company manages and with the Navy co-owns the huge Coso geothermal site in the Mojave Desert, which sells electricity to Southern California Edison. It also runs geothermal plants in Utah and Nevada and holds rights to 500,000 acres of hot properties throughout the Rockies and the Sierras.

Managers can anticipate trends such as industry consolidation and regulatory change, but many opportunities for growth aren't nearly so apparent. Although America's MBA factories are trying to reduce entrepreneurship to something that can be scientifically modeled and analyzed, real tycoons still have a high tolerance for chaos. Says Regis

THE FIVE HIGHEST EARNINGS

past four quarters ($ millions)

1	AMGEN	$244.3
2	BLOCKBUSTER ENTERTAINMENT	$112.0
3	FIRST FINANCIAL MANAGEMENT	$107.2
4	CONNER PERIPHERALS	$101.3
5	CISCO SYSTEMS	$84.4

THE FASTEST-GROWING COMPANIES

		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
81	SOFTWARE SPECTRUM	55%	$174.0 62	40% 49	$4.5 84	$23.00 $12.00	16	$72 82	Nasdaq	Reseller of business software for microcomputers, serving mainly big companies; provides seminars, technical support.
82	ASSOCIATED NATURAL GAS'	54%	$824.2 13	44% 46	$10.0 60	$28.38 $27.25	35	$400 39	NYSE	Gathers, processes, and transports natural gas and crude oil in eight Southern states; looking for acquisitions.
83	SILICON GRAPHICS	54%	$739.1 14	29% 60	$50.7 13	$21.50 $20.50	24	$947 11	NYSE	Computer systems with 3-D color graphics; acquired $129-million-a-year MIPS Computer Systems (RISC technology).
84	MID ATLANTIC MEDICAL SERVICES	54%	$494.3 20	77% 21	$10.9 57	$11.88 $8.63	15	$167 68	Nasdaq	HMOs in Virginia, Maryland, and District of Columbia, with projected membership of about 460,000 by year-end.
85	KOMAG	54%	$289.9 36	—	$9.1 63	$15.88 $21.50	38	$325 48	Nasdaq	Supplies thin-film components for computer disk drives. Three manufacturing joint ventures, one in Japan.
86	ADOBE SYSTEMS	54%	$252.1 44	49% 42	$54.4 12	$32.50 $50.88	14	$732 21	Nasdaq	Systems and applications software for electronic printing and publishing. Its PostScript computer language is industry standard.
87	ORBITAL SCIENCES	54%	$153.5 69	—	$2.4 93	$11.38 $15.25	54	$132 77	Nasdaq	Builds unmanned space and suborbital vehicles; setting up global satellite network for pager-like devices that send text.
88	OCTEL COMMUNICATIONS	53%	$188.8 57	53% 38	$21.4 34	$21.75 $26.75	19	$381 43	Nasdaq	Its newest system lets a user send and receive voice mail or computer data, ask for a fax, get news services through a phone.
89	LYNCH	53%	$101.7 88	5% 73	$1.6 97	$18.88 $17.88	15	$24 98	ASE	Diversified! Phone companies in niche markets, mobile-home transport, glass-making machinery, investment advice.
90	HEALTHSOUTH REHABILITATION	52%	$316.7 33	37% 50	$25.4 28	$21.88 $23.38	25	$409 38	NYSE	Provides acute care at four medical centers, therapy for chronic cases at 119 inpatient and outpatient centers.

Cisco links Allegheny Ludlum's computers to the steel mill's floor.

McKenna: "Steve Jobs and Steve Wozniak. Bill Gates—they didn't put together business plans. They went out and did it."

Jeff Bernstein and Brian Hinman certainly followed the "just do it" philosophy. They formed PictureTel in August 1984 and, rather astonishingly, raised $4 million through a public stock offering that October. How did they pull it off? Bernstein guesses it was the credibility of the MIT name and the backing of their professor, David Staelin, who signed on as chairman.

At that point, videophones worked only on special high-capacity phone lines. Creating a continuous stream of visual images required transmitting huge amounts of digitized information. But the world isn't going to get totally wired for data anytime soon. Voice telephone lines will remain the only universal link. The MIT kids figured the key to popularizing videophones would be enabling users to dial up calls on regular phone lines. PictureTel made it work using "digital compression." That means creating complex algorithms to transmit only the information that's absolutely essential. (AT&T uses digital compression technology developed by another startup, Compression Labs of San Jose, California.)

After two years of R&D, PictureTel's money was running out. Staelin called on Norman Gaut, an MIT Ph.D. in planetary physics with whom he had run an environmental consulting firm. Gaut raised $2 million more from friends and $1 million from Japan's Kyocera and Ascii. Finally the company came out with a crude product, installing its first videoconferencing system at ADR, a software firm in New Jersey. The 200-pound, 1,800-watt unit blew out the client's lights and computers.

Since that unpropitious start, PictureTel has spawned a lineup of leading-edge systems for business use, with high-quality video and sound. They sell for around $20,000; AT&T's videophone, by contrast, is a relatively crude $1,500 machine for home use. In July, IBM began shipping PS/2 desktop computers that use PictureTel technology to double as videophones. In October, PictureTel and Siemens will publicly demonstrate a stand-alone phone with a four-inch screen.

The techies who launch high-growth companies tend toward restlessness. Sneaker-clad Bernstein remains PictureTel's "chief guru," says CEO Gaut, but cofounder Hinman is already off running his second startup, Polycom, in San Jose, which just started to ship a mass-market audio conferencing device retailing for $1,000. Sandy Lerner and Len Bosack's de-

THE FASTEST-GROWING COMPANIES		SALES		EARNINGS		STOCK				WHAT THEY DO
		Annual growth rate 3-5 years	Last four quarters $ millions 100 RANK	Per share annual growth rate 100 RANK	Net last four qtrs. $ millions 100 RANK	Price 8/31/92 Year earlier	P/E last four qtrs.	Market value $ millions 100 RANK	Where traded	
91	DUTY FREE INTERNATIONAL	52%	$272.8 41	41% 48	$25.3 29	$27.13 $34.75	27	$772 18	NYSE	Shops in airports, along Canadian and Mexican borders, at terminals for departing cruise ships; phone orders for diplomats
92	VIATECH	51%	$293.7 35	32% 55	$6.6 76	$24.88 $29.00	11	$71 83	ASE	Packaging for food, chemicals, cosmetics, more. Subsidiaries in Germany, Spain, France. Czechoslovakia could be next
93	VALUE HEALTH	51%	$207.7 51	—	$11.0 55	$37.75 $21.13	50	$509 30	Nasdaq	Managed care for health plans serving 21 million people nationwide. Subsidiaries provide mental health services, foot care
94	SYQUEST TECHNOLOGY	51%	$163.7 66	26% 66	$10.3 59	$16.25 —	1'	$179 64	Nasdaq	Makes and markets removable cartridge disk drives and data storage cartridges for Apple, IBM, and clone machines
95	MAGMA POWER	51%	$98.4 89	55% 37	$34.6 20	$21.63 $26.88	15	$496 33	Nasdaq	Operates four geothermal power plants in Southern California, gets royalties from others; seeking still more hot spots
96	GENDEX	51%	$94.3 92	24% 69	$6.5 78	$25.63 $10.88	38	$255 56	Nasdaq	Dental drills, X-ray systems, and such. Acquired a Dutch X-ray company and a U.S. medical and industrial X-ray tube maker
97	HEALTHCARE COMPARE	51%	$88.7 96	48% 44	$18.8 39	$35.25 $28.00	53	$1,163 9	Nasdaq	Manages health care costs, assessing treatment prescribed for people in clients' plans and lining up low-cost providers
98	MERISEL	50%	$1,855.8 3	—	$17.4 42	$7.13 $3.00	11	$208 60	Nasdaq	Wholesaler of microcomputer products with subsidiaries in Canada, Europe, Australia; joint venture in CIS; Mexican distributor.
99	OGDEN PROJECTS	50%	$412.7 22	129% 2	$56.4 10	$17.00 $21.63	11	$639 24	NYSE	Operates a score of plants that burn municipal garbage and create electricity or steam; currently negotiating with Chicago
100	NEW LINE CINEMA	50%	$244.1 45	29% 62	$7.7 67	$11.13 $12.13	21	$140 74	ASE	Independent movie producer and distributor. Average cost to produce a film: a low $5.2 million. Distributed hit *The Player*.

parture from Cisco followed their clash with Morgridge, brought in as CEO by venture capitalist Donald Valentine, whose firm bought 34% of the company for $2.5 million in 1987. (And made $53 million on paper when Cisco went public two years later.) Says Lerner: "Very few people are technically capable *and* have the foresight, experience, or good luck to structure high-potential companies and stay in the driver's seat." Bill Gates is a notable exception.

Bosack and Lerner sold their Cisco stock within a year of leaving. They've set up a charitable foundation with $115 million. He donates to scientists; she supports animal rights. And they've started a new company that's trying to rev up the retrieval of data from disk drives, which for years has trailed far behind the stunning gains in processing speed. They expect to get their first product to a small number of sophisticated users at national research labs by the middle of next year. Who says there are no second acts in American lives? F

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			Rank
ADOBE SYSTEMS	Mountain View, Calif.	415-961-4400	86
ADVANCED LOGIC RESEARCH	Irvine, Calif.	714-581-6770	40
AES	Arlington, Va.	703-522-1315	58
AMERICAN OIL & GAS	Houston	713-739-2900	75
AMERICAN POWER CONVERSION	West Kingston, R.I.	401-789-5735	39
AMERICAN WASTE SERVICES	Warren, Ohio	216-856-8800	19
AMGEN	Thousand Oaks, Calif.	805-499-5725	29
ASSOCIATED NATURAL GAS	Denver	303-595-3331	82
BLOCKBUSTER ENTERTAINMENT	Fort Lauderdale, Fla.	305-524-8200	22
CABLETRON SYSTEMS	Rochester, N.H.	603-332-9400	36
CALIFORNIA ENERGY	Omaha	402-330-8900	11
CALLAWAY GOLF	Carlsbad, Calif.	619-931-1771	21
CENTURY MEDICORP	Los Angeles	213-266-1254	64
CIRRUS LOGIC	Fremont, Calif.	510-623-8300	23
CISCO SYSTEMS	Menlo Park, Calif.	415-326-1941	3
COLUMBIA HOSPITAL	Fort Worth	817-870-5900	4
COMPTRONIX	Guntersville, Ala.	205-582-1800	68
COMPUCOM SYSTEMS	Dallas	214-783-1252	25
CONNER PERIPHERALS	San Jose, Calif.	408-456-4500	34
CONTINENTAL MEDICAL SYSTEMS	Mechanicsburg, Pa.	717-790-8300	79
COVENTRY	Nashville	615-251-5500	27
CRITICAL CARE AMERICA	Nashua, N.H.	603-886-0900	61
DAMON	Needham Hts., Mass.	617-449-0800	9
DELL COMPUTER	Austin, Tex.	512-338-4400	77
DESTEC ENERGY	Houston	713-735-4000	35
DIAGNOSTEK	Albuquerque, N.Mex.	505-345-8080	13
DUTY FREE INTERNATIONAL	Ridgefield, Conn.	203-431-6057	91
EXCO GROUP	Nashua, N.H.	603-888-1212	45
ENERGY VENTURES	Houston	713-297-8400	31
EXABYTE	Boulder, Col.	303-442-4333	8
EXIDE ELECTRONICS GROUP	Raleigh, N.C.	919-872-3020	72
FIRST FINANCIAL MANAGEMENT	Atlanta	404-321-0120	69
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FRANKLIN QUEST	Salt Lake City	801-975-1776	49
GENDEX	Milwaukee	708-640-4800	96
GENZYME	Cambridge, Mass.	617-252-7500	74
GRANCARE	Culver City, Calif.	310-645-1555	2
HEALTHCARE COMPARE	Downers Grove, Ill.	708-241-7900	97
HEALTHSOUTH REHABILITATION	Birmingham, Ala.	205-967-7116	90
HOSPITAL STAFFING SERVICES	Fort Lauderdale, Fla.	305-771-0500	66
ID3 COMMUNICATIONS	Culver City, Calif.	213-870-9000	51
INTEGRATED HEALTH SERVICES	Hunt Valley, Md.	410-584-7050	60
INTELLIGENT ELECTRONICS	Exton, Pa.	215-458-5500	16
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KNOWLEDGEWARE	Atlanta	404-231-8575	47
KOMAG	Milpitas, Calif.	408-946-2300	85
LDDS COMMUNICATIONS	Jackson, Miss.	601-364-7000	30
LYNCH	Greenwich, Conn.	203-629-3333	89
MAGMA POWER	San Diego	619-487-9412	95
MATRIX SERVICE	Tulsa	918-838-8822	32
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MERISEL	El Segundo, Calif.	310-615-3080	98
MICRONICS COMPUTERS	Fremont, Calif.	510-651-2300	53
MID-AMERICAN WASTE SYSTEMS	Canal Winchester, Oh.	614-833-9155	46
MID ATLANTIC MEDICAL SVCS.	Rockville, Md.	301-294-5140	84
NABORS INDUSTRIES	Houston	713-874-0035	71
NEW LINE CINEMA	New York City	212-649-4900	100
NOVACARE	Valley Forge, Pa.	215-631-9300	63
OCTEL COMMUNICATIONS	Milpitas, Calif.	408-321-2000	88
OFFICE DEPOT	Delray Beach, Fla.	407-278-4800	12
OFFSHORE PIPELINES	Houston	713-952-1000	73
OGDEN PROJECTS	Fairfield, N.J.	201-882-9000	99
ORACLE SYSTEMS	Redwood City, Calif.	415-506-7000	78
ORBITAL SCIENCES	Fairfax, Va.	703-631-3600	87
OUTBACK STEAKHOUSE	Tampa	813-282-1225	7
OXFORD HEALTH PLANS	Darien, Conn.	203-656-1442	33
PHARMACY MANAGEMENT SVCS.	Tampa	813-626-7788	65
PHYCOR	Nashville	615-665-9066	5
PICTURETEL	Danvers, Mass.	508-762-5000	14
QVC NETWORK	West Chester, Pa.	215-430-1000	43
QUAL-MED	Pueblo, Col.	719-542-0500	6
QUANTUM	Milpitas, Calif.	408-894-4000	67
RADIUS	San Jose, Calif.	408-434-1010	52
RALLY'S	Louisville, Ky.	502-245-8900	54
RAMSAY-HMO	Coral Gables, Fla.	305-447-3200	76
RANDOM ACCESS	Denver	303-745-9600	48
RASTEROPS	Santa Clara, Calif.	408-562-4200	28
REGAL COMMUNICATIONS	Ft. Washington, Pa.	215-540-1190	50
REPUBLIC WASTE INDUSTRIES	Atlanta	404-431-7140	15
SCIMED LIFE SYSTEMS	Maple Grove, Minn.	612-420-0700	38
SERV-TECH	Houston	713-644-9974	57
SILICON GRAPHICS	Mountain View, Calif.	415-960-1980	83
SOFTWARE SPECTRUM	Garland, Tex.	214-840-6600	81
SPORTSTOWN	Norcross, Ga.	404-246-5300	55
STAPLES	Framingham, Mass.	508-370-8500	24
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SYMANTEC	Cupertino, Calif.	408-253-9600	37
SYNOPTICS COMMUNICATIONS	Santa Clara, Calif.	408-988-2400	10
SYQUEST TECHNOLOGY	Fremont, Calif.	510-226-4000	94
T^2 MEDICAL	Alpharetta, Ga.	404-442-2160	18
TRIMAS	Ann Arbor, Mich.	313-747-7025	70
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VENCOR	Louisville, Ky.	502-569-7300	56
VIATECH	Syosset, N.Y.	516-822-4940	92
VISHAY INTERTECHNOLOGY	Malvern, Pa.	215-644-1300	80
WATSCO	Coconut Grove, Fla.	305-858-0828	44
WELLFLEET COMMUNICATIONS	Bedford, Mass.	617-275-2400	1
XILINX	San Jose, Calif.	408-559-7778	41

The world's growth center is shifting across the Pacific, spurring the fastest-rising markets on the globe. The U.S. succeeded in containing communism. Now the winners are mostly Asian capitalists.

ASIA 2000

■ By Louis Kraar

THE PACIFIC CENTURY is dawning like thunder out of China. Yes, everyone has been gazing at the horizon in anticipation of the emergence of a new center of economic growth. But its arrival comes with dramatic impact for Western business—and with a few surprises. Already Asia is the world's biggest consumer of steel and, not counting Japan, the fastest-growing market for autos. Even richer opportunities lie ahead. By the year 2000 the economies of East Asia—spanning from Japan to Indonesia—will almost certainly equal that of the U.S. and total about four-fifths of the European Community.

More important, China is fitfully awakening, stretching to become both a new export power and a market of 1.17 billion potential consumers. A preview of that future is visible in the Pearl River Delta, where Chinese eagerly buy the brands of beer and television sets advertised on TV shows beamed from nearby Hong Kong. Says Singapore's former Prime Minister Lee Kuan Yew, one of Asia's most durable and visionary leaders: "What Hong Kong and Taiwan have done, China will be able to do when she has moved completely into a market economy without subsidized state industries."

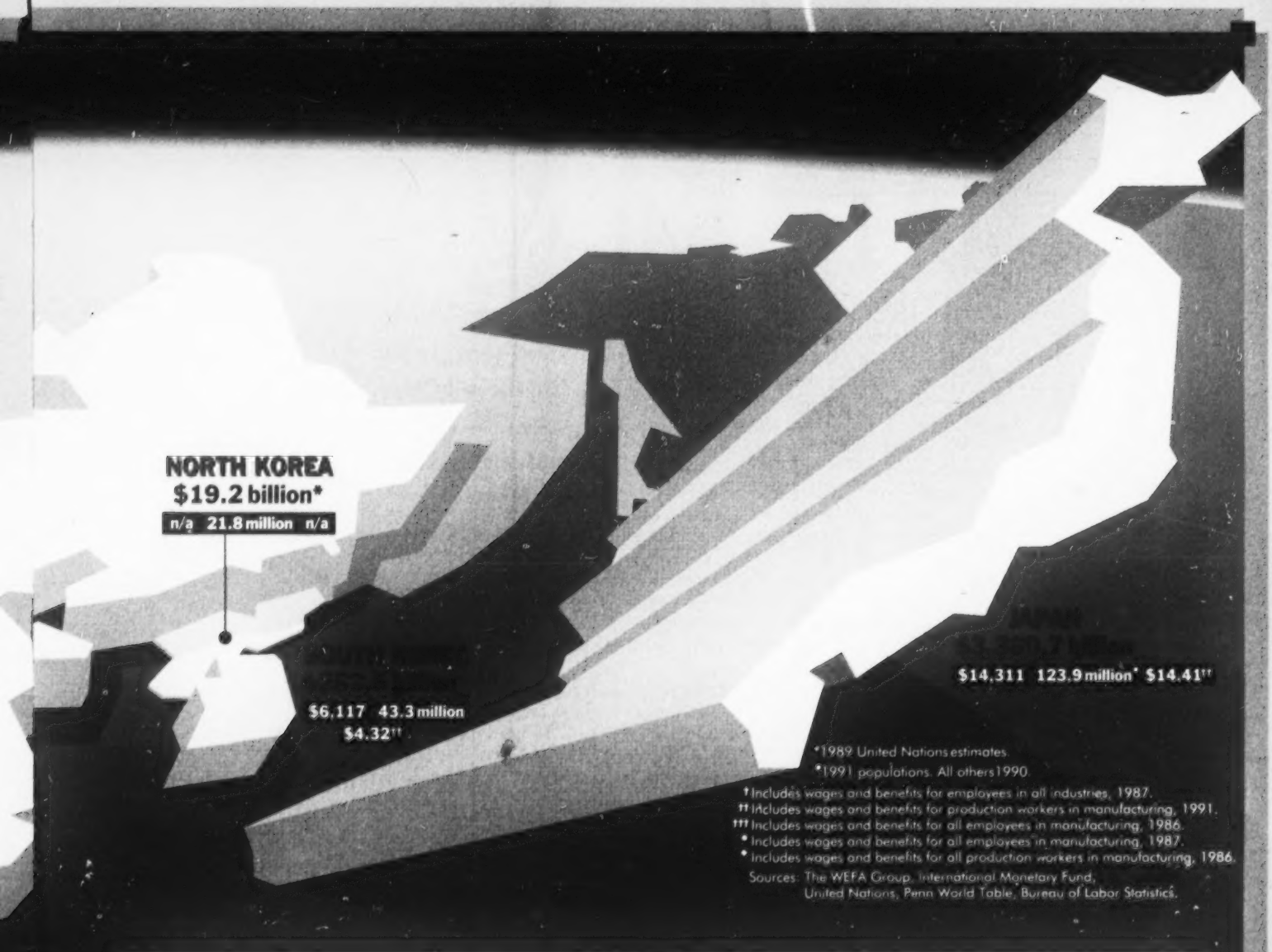
Barely noticed by many Westerners, such new economic powers as Thailand, Malaysia, and Indonesia are also rising rapidly, on the strength of manufacturing as well as natural resources. Says Bill Barron, a senior fund manager in Hong Kong for Aetna Investment: "Southeast Asia's growth has kind of snuck up on the West. The major economies of the region will be coming into their own in the next century."

In this vibrant region, oddly enough, America has a fairly low profile. Having fought two bitter wars since 1950 to contain communism in Asia, the U.S. has certainly triumphed. Not only China but also Vietnam is moving toward capitalism. Even North Korea is inching in that direction. But the most active participants in Asian business are the Japanese and some 55 million Overseas Chinese scattered among the high-growth Asian countries.

What happened to the Americans? Recession cannot be solely to blame, for Japan has slowed too. Says an American economist in Jakarta, Indonesia's capital: "We're just not aggressive." It's tough pioneering such markets as Indonesia and China, which lack a solid legal framework for business and rely more on personal relationships. But by holding back, U.S. companies are almost handing opportunities to more daring Asian rivals—both Japanese and potent conglomerates in Thailand, Singapore, and South Korea. The strength they gather in Asia will eventually pose a competitive threat to American companies in the U.S. Says Linda Lim, a Southeast Asian specialist at the University of Michigan: "We must deny the Japanese a profit sanctuary."

Americans must begin by learning more about Asia, which is far from an exclusive Japanese preserve. Says Singapore economist Lee Tsao Yuan: "People talk of Japan as the economic leader of Asia, but the Overseas Chinese are also a driving force." They are a lot more venturesome these days than the Japanese, who are hurt by troubles in both their securities and property markets. Leading Overseas Chinese entrepreneurs can be invaluable middlemen because they operate through a network of personal contacts that extends into China. Procter & Gamble, for instance, got into

THE PACIFIC RIM
Countries are scaled by size of Gross Domestic Product
CHINA
GDP $371.2 billion
IN U.S. DOLLARS, 1991
$2,656 1,139 million $0.24[1]
Per Capita GDP
ADJUSTED FOR PURCHASING POWER, 1989
POPULATION
Average hourly compensation
IN U.S. DOLLARS
LAOS
$1.4 billion*
n/a 4.1 million n/a
MYANMAR
$16.4 billion*
$595 41.7 million n/a
HONG KONG
$82.7 billion
$15,180 5.8 million $3.58[1]
THAILAND
$92.0 billion
$3,569 56.9 million* n/a
$6,837 20.4 million $4.42[1]
CAMBODIA
$0.9 billion*
n/a 8.2 million n/a
n/a 66.2 million n/a
$2,269 62.9 million* $0.42*
$5,649 17.9 million $1.19*
$15,108 2.8 million* $4.38[1]
$2,034 179.3 million $0.40[1]


NORTH KOREA
$19.2 billion*
n/a 21.8 million n/a
$6,117 43.3 million
$4.32††
$14,311 123.9 million* $14.41††
*1989 United Nations estimates.
*1991 populations. All others 1990.
† Includes wages and benefits for employees in all industries, 1987.
†† Includes wages and benefits for production workers in manufacturing, 1991.
††† Includes wages and benefits for all employees in manufacturing, 1986.
* Includes wages and benefits for all employees in manufacturing, 1987.
* Includes wages and benefits for all production workers in manufacturing, 1986.
Sources: The WEFA Group, International Monetary Fund, United Nations, Penn World Table, Bureau of Labor Statistics.

the Chinese shampoo market by striking an alliance with Hong Kong billionaire Li Ka-shing.

Fully understanding the active economic role of Asian governments will also help U.S. business. Most Asian nations practice a brand of capitalism that combines industrial policy with freewheeling competition. In Singapore, a paragon of free enterprise, the government runs many industrial companies, including Singapore Technologies Group, which had $1.3 billion in sales last year and has joint ventures with such companies as Xerox and Pratt & Whitney. And in Indonesia, where several children of President Suharto run conglomerates, one of them is the local partner of AT&T. Clearly, knowing the players in each country helps in penetrating the market.

The most important thing that Westerners can learn from Asians is how to motivate workers. The region's success is often explained in terms of cultural forces, including close family ties, a strong belief in the value of education, a penchant to save for the future. Those Confucian values are much the same as what Americans once called the Puritan Ethic. There's nothing exotic about the strength of Asians: They just work hard at everything. So can Westerners. F

GRAPHICS BY JOHN GRIMWADE

CHINA REALLY IS ON THE MOVE

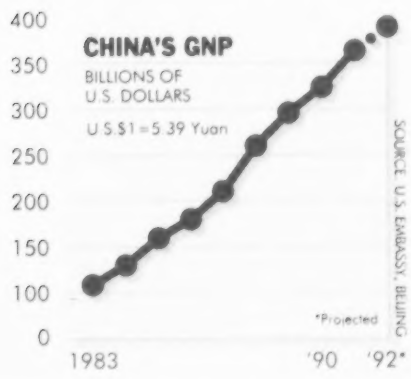
The hard-liners keep hanging on, but the numbers are difficult for even the crustiest socialist to argue against.

■

BRENTON SCHLENDER

GO JUST about anywhere in China and you're likely to run into a traffic jam. Swarms of bicycles, cars, trucks, and pedestrians joust their way around one construction project after another. Skylines bristle with cranes—so many that you wonder whether the spindly gantries shouldn't be designated the new national bird. China has become the world's largest construction site as crews in nearly every corner of the country rush to reroute roads, bridge unspanned rivers, stack up office towers, and carve factories out of rice paddies in the name of economic reform.

All this frenetic building is the most palpable sign of the scope, ambition, and attendant chaos of China's renewed rush to become a market-driven 20th-century economy by the turn of the 21st. And it's not restricted to suburban Hong Kong and the ballyhooed coastal regions of South China (see following story). From sleepy tea- and rice-growing towns in the countryside to the teeming streets of Shanghai, Wuhan, Tianjin, and Beijing, China is booming. The only exceptions are China's remote and backward western provinces, which cover vast areas of desert and mountainous terrain. If you've been doing most of your worrying about Japan as a tough competitor, you can start thinking about adding China.



Apparently lost in the dust kicked up by all this activity are the political misgivings and fears of many ordinary Chinese following the 1989 pro-democracy clashes that left student protesters' blood smeared on Tiananmen Square. While the West can't shake those violent images, in China what sets people's tongues wagging these days are the doings at the new stock markets in Shanghai and Shenzhen, the price of lucky phone numbers auctioned off in Beijing, the "high" salaries offered by new foreign joint ventures and small independent businesses (about $100 a month, or triple the average worker's wage), and other trappings of what many would call capitalism. Says Bank of Tokyo China expert Isao Ohkuba: "China has already passed the point of no return. The Chinese now have a taste of how people live in the outside world and no longer will they tolerate a lower standard of living. China *has* to keep reforming."

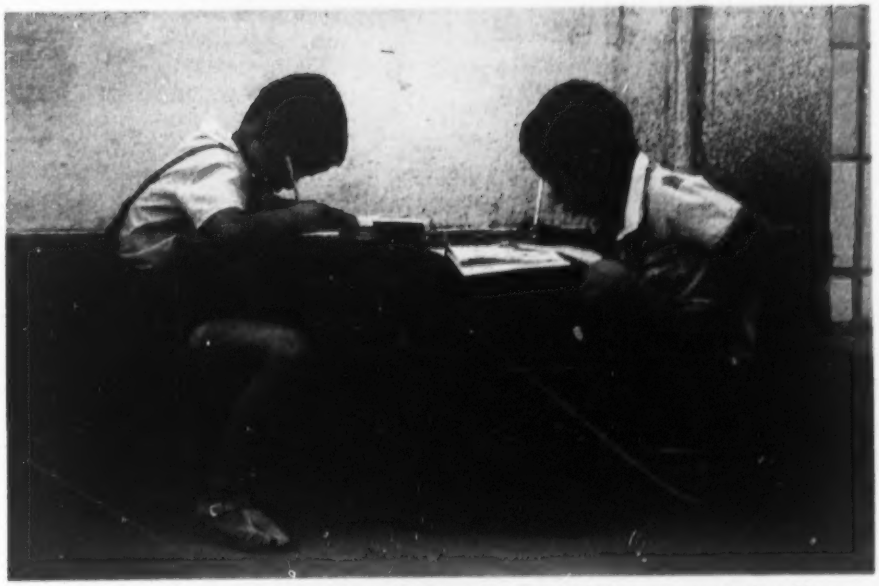
The head cheerleader for redoubled economic reform is none other than senior leader Deng Xiaoping, 88 years old and counting. Since early this year, Deng has made a spectacle of visiting factories and special economic zones that are the best examples of the new, improved China, and declaring that "to be rich is glorious." He has relentlessly prodded both the ruling Communist Party and bureaucrats to accelerate reform of state-run industries and the process of opening to the outside world.

The bustle of Shanghai, China's largest city, is a reflection of the country's renewed effort to become a market-driven 20th-century economy —in time for the start of the next century.

PHOTOGRAPHS BY FORREST ANDERSON—GAMMA/LIAISON

The numbers are hard even for diehard socialists to argue against. The growth of China's gross domestic product, which has averaged 8.6% annually since reforms began in 1979, should hit double digits this year. Unemployment is down to 2.5%, and exports grew 16% last year to $72 billion. Average salaries rose more than 10% in 1991 while inflation held at 4.2%. Government price controls now affect less than a third of available goods, and more products and materials are being decontrolled every month. Meanwhile, foreign investment, which slumped after 1989's political turmoil, last year climbed to $5 billion.

Nevertheless, China is an economy under construction, and communist foremen are still on the building site, so hard hats are recommended. Says a Western diplomat: "China has made all the easy, win-win reforms of freeing up agriculture and small-scale enterprise, setting up stock market experiments, and encouraging overseas trade and foreign investment. But now they face the meat of the matter: They must revitalize the state-run industrial dinosaurs, they must rationalize the byzantine bank-



The past: These children in Wuxi, near Shanghai, painstakingly write Chinese characters the old way.

ing, tax, and currency exchange systems, and they must reduce both the role and the size of government. Each of these reforms faces entrenched opposition either in the Communist Party or in particular ministries and provinces. I'm not sure there's enough political will to do it all."

China's to-do list is as daunting as it is long. As always, politics complicate every line item. After 42 years of communist rule, there is still no orderly method of political succession for key leaders in either the party or the government. Some practical matters are even more pressing. The government has had budget deficits in 11 of the 12 years since reform began. Last year the deficit equaled 3.4% of gross national product, and this year it could exceed 4%. The deficit, coupled with double-digit growth rates, could trigger another round of inflation and wipe out much of the improvement in the standard of living in a matter of months.

Meanwhile, economic reform—along with more cost-conscious managers—is finally beginning to crack China's vaunted "Iron Rice Bowl" policy of providing cradle-to-grave job security. So far the expanding economy has created new jobs for those who have been fired, but if it stops doing so, social unrest is almost sure to follow. Reform is also widening the differences in living standards across the country. Such disparities also could lead to social discord.

Finally, China must tackle the stodgy, oversubsidized, state-run enterprises that dominate heavy industry—steel mills, mining concerns, makers of vehicles and machinery. These behemoths account for about half the country's industrial output, but one-third of them are bleeding buckets of red ink, and another third are struggling, even with huge cash infusions and price protection from Beijing.

All these are structural problems that require stern, painful change from the top down. But China's answer to many of the problems seems to be, "Let's build another special economic zone." Case in point: the government's ambitious plan to revitalize Shanghai, which is China's largest city, with 12 million people, and home to much of the country's heavy industry and its biggest port. While Shanghai's stylish Western architecture has survived and its economy has thrived in recent years, the old city, once known as the Paris of the East, is simply too crowded and its city services too decrepit to absorb much new growth. So, rather than bulldoze the Bund, the famous phalanx of art-deco office buildings put up along the Huangpu riverfront by foreigners earlier this century, authorities chose to redevelop Pudong, a 135-square-mile area of light industry and rice fields directly across the river.

The government plans to spend $3.7 billion there by 1995, putting up bridges, new thoroughfares, deepwater port facilities, industrial parks, and China's first free-trade zone, where goods could be imported and exported without duties. Japanese department store operators have signed on to build shopping malls, and Hong Kong real estate developers will put up thousands of apartments for sale to hordes of new residents. "Let's build Shanghai into a foreign-oriented, multifunctional, and modern

The future: This computer made by the Stone Group can create ideograms. This one means "endure."

State companies often provide preschooling for workers' children. This class is at Shougang Steel.

cosmopolis," crows one of the many temporary billboards at building sites.

Central to the strategy to revive state-run industry and to counterbalance Hong Kong's influence after it becomes part of China in 1997 is the Shanghai Securities Exchange. A more staid institution than the wild and woolly bourse in Shenzhen, where shareholders rioted this summer, the Shanghai exchange wants to be the home of big domestic industrial companies seeking to tap into China's vast private savings, now that the mounting deficit is forcing the government to curtail subsidies.

So far, 29 stocks are listed on the exchange; nine are special issues called B shares that can be bought by foreign investors. Exchange President Wei Wen Yuan, who had never seen a stock certificate much less set foot in an exchange before the Shanghai bourse opened in late 1990, designed the trading floor to fit into an ornate old theater. Representatives of 136 member brokers squeeze around 200 personal-computer trading terminals, eyes glued to a big electronic screen where the stage used to be. A new trading room will open later this year with 400 more terminals. While trading is less frantic than on the Shenzhen exchange, the SSE index started at 100 in December 1990 and is now above 800.

Shanghai Special Shaped Steel Tube Co. is a good example of a relatively small state-run industrial enterprise that has used the Shanghai exchange to leap toward independence. The maker of nearly 6,000 types of pipes, which expects revenues of about $15 million this year, first decided to start issuing shares in 1988. Last March bureaucrats finally gave the company permission to sell 30% of its shares to the public. (It could offer only A shares, limited to Chinese investors.)

But before managers could get approval to sell its shares, they had to prepare a business strategy that would hold up to shareholder scrutiny. That meant trimming the work force by 200, to 1,100, and setting productivity quotas and profit targets. Says Chairman Wan Meng Lan: "It's not so easy to be a manager anymore, even though I have more authority now. It became clear at the first shareholders' meeting that I have to worry about how we do in the market as much as how we do in the factory."

"IT BECAME CLEAR THAT I HAVE TO WORRY ABOUT HOW WE DO IN THE MARKET AS MUCH AS IN THE FACTORY."

So far, Wan's shareholders have nothing to complain about. The company's shares, which opened at $5.19, were selling for $26.11 in early September. Every employee is a shareholder now. Wan, 50, owns 125 shares.

Sadly, it won't be easy for most of China's heavily subsidized state enterprises to work that kind of stock market magic. Says a Western diplomat: "The problem is, the state enterprises are more like enormous feudal villages than modern corporations. They have to provide housing, recreation, hospitals, parks, and all manner of services, sometimes for hundreds of thousands of employees and their families. Consequently, it's not a simple matter of privatizing them, because who would want to buy a dinosaur company with dated technology and all that overhead?"

Managers of these enterprises are inclined to turn them into even bigger conglomerates that sometimes turn out like caricatures of Japan's famed keiretsu. A prime example is Shougang Corp., the government's showcase steel company in Beijing. Since economic reforms started in 1979, the company has branched into hotels, banking, machinery making, mining, shipbuilding, shipping, electronics, and even fashion design.

To its credit, Shougang's steel, made with Belgian equipment, is high quality. The company's 206,000 employees earn salaries 80% higher than the national average and have better housing, health care, and education than most Chinese. In 1991, the company exported $210 million of steel and earned $287 million on $1.69 billion in sales.

But Shougang is an exceptional case and owes much of its success to tax breaks and exemptions from government price controls. The government, nevertheless, holds Shougang up as an example of what state businesses ought to be, much to the chagrin of managers of other state enterprises. A top executive at a competitor calls Shougang "an exercise in political egotism" and contends that "much of Shougang's success comes at the expense of other state-run enterprises that supply it or compete with it."

Thankfully for China there's much more to the economy than giant, state enterprises. The biggest success stories in China are its small businesses, which rely on hard-headed entrepreneurship, rather than stock markets, subsidies, and special economic zones, to get ahead. Most are what the Chinese call

contract enterprises. They are the industrial offspring of the earliest experiments with free enterprise, under which individual farmers could contract with a township or village to cultivate plots of land. They paid a specified sum, usually around 10% of profits, and pocketed the rest.

With industrial contract enterprises, it's only a bit more complicated. First you need a bright idea for a business, say, making wedding gowns or photo enlargers or factory assembly equipment or personal computers. It is important to avoid products that fall under government price controls or are made of materials that are rationed. Then you get a loan commitment from the township or village bank, usually on the order of $1,800 to $2,000. Next you go to your township governor or village mayor to present your business plan and work out a contract for the amount of money you will "contribute." Smart entrepreneurs low-ball their projections, because future payments increase incrementally from the original sum. After that it's up to you.

So how do they work in real life? Like gangbusters. Just ask Wang Jia Ying, 34, a former waitress from Shanghai who turned her passion for fashion into ZhiMeiNai, a producer of Western-style wedding gowns and formal wear for Chinese movie studios. ZhiMeiNai operates out of a country courtyard villa outside Hiqui, a farming community of 13,000 people, 100 miles west of Shanghai. Posters of Fred Astaire and Ginger Rogers decorate the walls.

"THOUGH WE BUILT THE COMPANY, THE GOVERNMENT SAYS IT BELONGS TO THE PEOPLE—IN OTHER WORDS, THE STATE."

Wang started the company in 1988, at first employing only herself, her husband, and two retired tailors. Says she: "We are completely self-made people. We had nothing at first and knew nothing about business except what we had read. All I knew was that designing clothes is fun." Now ZhiMeiNai employs 50, mostly young women. Their average salary—$1,100 to $1,555 a year, plus free housing and health care—is triple the national average. ZhiMeiNai's 1991 revenues were about $150,000 and profits $37,000, before paying the $5,000 promised to the township.

Contract enterprises needn't be small or low tech. Stone Office Technology and Equipment Co. of Beijing, a producer of personal computers and word processors, is neither. It has 3,100 employees and sales in 1991 of more than $425 million. Stone even has a subsidiary in Australia. The big sellers are machines that can manipulate Chinese ideograms as well as Roman letters and conventional numbers.

Stone was one of the earliest contract enterprises to go industrial. Founded in 1984 by three former college roommates, it started out assembling Japanese computer printers but soon began building the printer mechanisms into full-blown computers of its own design. While business has thrived, the founders have not had an easy path. In 1989, then-president Wan Runnan fled after giving computers and moral support to student pro-democracy protesters. Wan, now living in Paris, remains on China's list of most-wanted political fugitives, and officials at Stone don't like to talk much about him.

Since then, another co-founder, Duan Yongji, 46, a dapper engineer who formerly worked in China's aeronautics ministry, has been president. Duan has spent a lot of time since Wang's exile keeping the government's nose out of Stone's business. "Our ownership is murky now," says Duan. "Even though we borrowed the money and built the company ourselves, the government

Shanghai, once called the Paris of the East but now feeling its years, will soon get a $3.7 billion face lift.

says Stone belongs to the people—in other words, the state. But we have always wanted the company to be owned by private shareholders. I say the government is welcome to ownership of Stone only if it is willing to buy our shares." So far the government hasn't allowed Stone to sell shares to the public, and as a result, Duan and his partners don't know whether they'll ever profit personally from their entrepreneurship.

Even so, Duan lives lavishly, at least by Chinese standards. Though his salary is only about $2,000 a year, the company provides him with a shiny Mercedes-Benz, a cellular phone, a roomy house, and $2,000 a month in travel and entertainment expenses. What's Duan's biggest concern? "It isn't the government. I worry more that foreign joint ventures moving into China will overwhelm us with their superior technology and higher salaries."

His fears are not unfounded. Western and Japanese companies have discovered that despite China's backward reputation, among its 1.17 billion people are quite a few computer nerds and technical whizzes. Two years ago Omron Corp., a Japanese maker of medical instruments and computer systems for banks, set up a joint venture software development laboratory in Shanghai to find out if Chinese programmers could turn out worldclass software. Now the venture, called Omron Shanghai Computer Corp., employs 70 people. According to President Bao Shuping, quality and productivity exceed that of Omron's labs back in Japan. Bao brags: "Everybody here but the driver has a university degree, and 50 of them have graduate degrees. Can you name another company with credentials like that?"

While China's main lure is cheap labor, many like Bao wish they could pay their Chinese employees more than they do. Says he: "I have a big problem with China's irrational income tax policy, because it doesn't let me reward my people directly for doing good work. Every yuan they make above 800 yuan (about $150 a month) is taxed at 60%. That forces us to provide hidden income in the form of nicer homes, free vacations for families, expense accounts, and occasional trips abroad. It would be so much simpler just to pay them more." The average salary, not including hidden income, for Omron's Chinese engineers is 700 yuan a month—about $130—or roughly four times the national average.

The Omron venture is small potatoes compared with other foreign high-tech investments. One of the biggest is Motorola's $120 million pager, cellular phone, and semiconductor plant in Tianjin, a coastal city about 100 miles from Beijing. Motorola, which broke ground for the plant this summer, is one of only a handful of Western companies allowed to own its facility outright rather than as a joint venture with a Chinese outfit.

Even with full autonomy, getting a high-tech venture going in China is a challenge. Surprisingly, the biggest headaches aren't technical ones. Says Daryl Despain, Motorola's controller in China: "Our No. 1 problem is the housing issue, and that is really all kinds of problems rolled into one." Rather than following the time-honored practice of providing houses for workers, Motorola wants to help them buy their own homes. Says he: "The temptation for a company is just to build dormitories and apartments, but that is not the right thing to do for our employees. We think home ownership is good for people."

Despain also can foresee problems meeting China's stringent export quotas for foreign ventures. The pager plant is supposed to export 70% of its production of 3,000 units a week. But with phone service so unreliable in China, domestic demand for pagers is heavy. One distributor has offered to buy all the devices the company can make. As much as Motorola would like to comply, it can't. Also, Despain says China's confusing foreign exchange rules and dual currency system—one kind for Chinese citizens, one for foreigners—make it difficult to keep enough of the right kind of cash on hand.

Regardless of the problems, there is a bright side. In late August, Motorola opened the temporary pager plant that will make the devices until the new factory is finished next year, and within just three weeks, workers had matched the quality of a sister plant in Singapore. Says Despain with a shrug: "I've never done anything so frustrating that I enjoy so much."

That's the sentiment of just about everybody involved with the lurching economic reform in China. Despite the lousy infrastructure and the bureaucratic impediments, the political uncertainties and the cultural contradictions, China's small successes and big ambitions are ever so slowly beginning to confirm that its fabled economic potential is for real. Now if only they could do something about the traffic . . . F

VITAL STATISTICS

1992 PROJECTIONS

Population: 1.17 billion
Population growth: 1.4%
Unemployment rate: 2.5%
GDP per capita: $302
Foreign Direct Investment: $5.5 billion
Government Budget Deficit as % of GDP 4% ($14.1 billion)
Inflation rate: 7%
Foreign debt: $65 billion
Exports: $83 billion
Imports: $71 billion

Source: U.S. Embassy, Beijing

Bicycles
Carpets
Cotton cloth
Electronic watches
Garments
Gold jewelry
Shoes
Steel products
TV sets

CHINA'S MAJOR EXPORTS AND COMMODITIES
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Shenyang
NORTH CHINA
Beijing
Tianjin
Taiyan
NORTH-WEST CHINA
Lanzhou
X'ian
Nanjing
Shanghai
Wuhan
Lhasa
SOUTH-WEST CHINA
Chengdu
EAST CHINA
CENTRAL-SOUTH CHINA
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Tobacco
Wheat
Corn
Oil fields
Coal reserves
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